

HPE Digital Learner Architecting MSFT Azure Solutions (Intermediate) Content Pack

HPE Content Pack number	CP011
Content Pack length	25 Hours
Content Pack category	Category 2
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This self-paced eLearning Content Pack represents a baseline training series for IT individuals who are transitioning to a cloud architect role utilizing the Microsoft Azure public cloud environment. This is a comprehensive training series that includes many core areas required to plan, design and implement Microsoft Azure public cloud infrastructure and applications and is intended for IT personnel who possess baseline IT and cloud skills needed to need to rapidly move forward into a cloud architect role utilizing the Microsoft Azure public cloud.

Audience

IT professionals responsible for planning and deploying Azure virtual machines and applications in a secure manner

such as Azure virtual machines, compute, network, storage, identities, security, databases, data services, automation, monitoring, artificial intelligence and application design requirements. This training will enable the student to transition to the cloud architect role and will also assist with the path to Microsoft Certification.

Content Pack objectives

This Content Pack provides the information necessary for a cloud architect to work within a Microsoft public cloud environment. This training will introduce many critical baseline knowledge areas in which a cloud architect must complete in order to transition to Microsoft public cloud domain. Areas of focus include an overall understanding of the overall Azure architecture, as well as a multitude of additional technical areas that make up the Azure public cloud environment

Detailed Content Pack outline

Architecting Microsoft Azure: Architecture Design

Microsoft Azure provides numerous automation tools. This course covers objectives for the 70-534 exam, such as using the Azure portal, Azure PowerShell, Azure CLI, and Azure Runbooks.

- Describe the components of an Azure environment
- Use the Azure portal to manage Azure services
- Describe the importance of automation
- Explain the benefit of using Azure PowerShell automation
- Explain the benefit of using Azure PowerShell Workflows
- Download and install Azure PowerShell on-premises
- Connect Azure PowerShell to an Azure subscription
- Build a script using the PowerShell ISE
- Build a workflow script using the PowerShell ISE
- Describe the benefit of using the Azure CLI
- Download and install Azure CLI on-premises
- Connect Azure CLI to an Azure subscription
- Explain the role Runbooks play in Azure
- Create an automation account using the Azure portal
- Create a simple PowerShell Azure Runbook
- Create a simple graphical Azure Runbook
- Connect command line tools to Azure

Architecting Microsoft Azure: Virtual Machines

Azure virtual machines provide the underpinning for many Azure services. In this course, you will examine virtual machine deployment methods including ARM templates. This course will also prepare you for exam 70-534 if required.

- Explain ARM management of Azure resources
- Describe how ARM templates are used to deploy and configure Azure resources
- Describe how availability sets and update and fault domains relate to virtual machines
- Deploy a virtual machine availability set
- Create a template for ARM deployment of resources
- Explain configuration settings related to ARM virtual machines
- Use the Azure portal to deploy a virtual machine
- Use the Azure portal to deploy an ARM template
- Use Azure PowerShell to deploy an ARM template
- Use the Azure CLI to deploy an ARM template
- Use various methods to deploy virtual machines

Architecting Microsoft Azure Solutions: Compute Design Considerations

In this course, you will explore how to design and implement Microsoft Azure VM configurations that are highly available and resistant to failure through availability and scale sets and Azure backup options.

- Define when availability sets should be used
- Enable application resiliency using availability sets
- Recognize how scale sets optimize application performance and cost savings
- Configure Azure VM autoscaling through scale sets
- Identify use case scenarios for compute intensive jobs
- Configure an Azure Batch job using the portal
- Identify use case scenarios for Azure Backup
- Configure an Azure VM with backup options
- Perform a restore of files from a restore point for an Azure VM
- Back up on-premises files and folders to Azure
- Back up on-premises SQL databases to Azure using DPM
- Identify use case scenarios for Azure Site Recovery
- Configure VM disaster recovery in a secondary Azure region

Architecting Microsoft Azure Solutions: Network Design

In this course, you will discover how to configure internal and external Azure networking, explore Azure virtual networks design and deployment, and learn load balancing techniques.

- Recognize Azure virtual network configuration options
- Identify how DHCP default settings affect deployed virtual machines
- Identify how default and custom DNS settings can be applied to virtual machines
- Configure an Azure virtual network with the appropriate DNS, DHCP and IP settings using the portal
- Configure an Azure virtual network with the appropriate DNS, DHCP and IP settings using PowerShell
- Deploy an Azure virtual network (VNet) using the Azure CLI
- Determine when the Azure Load Balancer should be used
- Configure the Azure Load Balancer using the portal
- Identify when to use the Azure Application Gateway
- Configure the Azure Application Gateway using the portal
- Identify when the Azure Traffic Manager should be deployed
- Configure Azure Traffic Manager using the portal

Architecting Microsoft Azure: Network Design

This course will help prepare you for the 70-534 exam which will test the candidate's abilities in configuring Azure networking components to allow connectivity within and to the Azure cloud.

- List components used to configure Azure networking
- Describe when and how VNets and subnets are created
- Deploy an Azure VPC and subnet
- Outline various Azure VPN connectivity options
- Explain how ExpressRoute works
- Explain Azure DNS offerings
- Use the Azure portal to configure DNS settings
- Describe how network interfaces are assigned IP addresses through DHCP
- Use the Azure portal to configure a static IP reservation
- Explain network security group usage
- Create and associate a network security group
- Explain the purpose of user defined routes
- Configure a user defined route using the Azure portal
- Deploy an Azure VPC, subnet and network security group

Architecting Microsoft Azure Solutions: Azure External Network Connectivity Design

In this course, you will discover how to connect external clients and networks to Azure resources, P2S/S2S VPNs, VNet peering and ExpressRoute circuits.

- Recognize options allowing external access to Azure through a VPN
- Deploy a VPN gateway using the portal
- Enable secure remote user access through a point-to-site VPN configuration
- Create a VPN connection between an on-premises network to an Azure virtual network]
- Perform the step necessary to verify VPN gateway operation
- Configure a Windows 10 client with an Azure P2S VPN connection
- Deploy an Azure virtual network peering configuration
- Identify the appropriate use of Azure ExpressRoute

Architecting Microsoft Azure Solutions: Azure Storage Design

In this course, you will discover how to plan, create and manage Azure storage solutions, and explore Blob storage, Azure File Storage shares, Managed Disks and StorSimple.

- Determine when a specific Microsoft Azure Storage solution should be used
- Identify when Azure Blob storage tiers should be used
- Create an Azure Blob storage account
- Manage Azure Blob items and settings using the GUI
- Upload and download blob items using PowerShell cmdlets
- Perform storage account management using the Storage Explorer tool
- Describe how Azure File Storage is useful
- Use Azure File Storage to map a network drive
- Recognize when to use managed versus unmanaged VM disks
- Use the portal and PowerShell to configure VM managed disks
- Deploy an Azure storage account using PowerShell
- Deploy an Azure storage account using the Azure CLI
- Design a hybrid cloud storage solution using StorSimple

Architecting Microsoft Azure: Storage Design

The 70-534 exam will test the candidate's ability to select the best storage option for a given scenario. Azure has numerous database storage options that are covered in this course.

- Select the best storage options to meet business needs
- Describe when Table storage should be used
- Configure Azure Table storage
- Describe when Azure SQL Database should be used
- Deploy Azure SQL Database
- Describe when DocumentDB should be used
- Describe when Blob storage should be used
- Use the Azure portal to create a storage account
- Deploy Blob storage
- Describe when MongoDB should be used
- Deploy MongoDB
- Describe when MySQL should be used
- Deploy MySQL
- Describe Azure storage and deploy Azure SQL Database

Architecting Microsoft Azure Solutions: Managing Identities

In this course, you will explore user, group and app identities in Azure authentication, and examine external identity sources and Azure resource management.

- Describe the role identity management plays in Azure
- Identify the features of Azure AD
- Plan and implement an on-premises to Azure Active Directory connection
- Describe the role that Active Directory Federation Services can play in authentication
- Use the portal to create Azure AD users and groups
- Use PowerShell cmdlets to create Azure AD users and groups
- Recognize supported external user identities that can be authorized to use Azure resources
- Create a configuration allowing Google IDs to access Azure resources
- Describe Azure resource control through RBAC
- Use the portal to assign built-in Azure roles
- Use the CLI to create and assign a custom Azure role
- Use PowerShell to create and assign a custom Azure role including Azure AD Privileged Identity Management

Architecting Microsoft Azure Solutions: Securing the Azure Environment

In this course, you will learn about Azure security strategy design and implementation. Key vaults, network security groups and Azure SQL TDE encryption are covered. It helps prepare for exam 70-535: Architecting Microsoft Azure Solutions.

- List Azure security options that protect Azure cloud deployments
- Describe how NSGs control inbound and outbound network traffic
- Use the portal to configure a NSG
- Use the Azure Cloud Shell to configure a NSG
- Recognize the role of Azure Key Vaults and code
- Use the portal to create an Azure Key Vault
- Use the CLI to create an Azure Key Vault
- Use PowerShell to create an Azure Key Vault
- Recognize how Windows and Linux VM disk encryption is configured in Azure
- Use PowerShell to secure Windows VM disks
- Describe how MSIs remove the need for Azure resource credentials in code
- Secure Azure SQL Database through encryption
- Use the portal to configure Azure Security Center

Architecting Microsoft Azure: Security Strategy Design

In this course, you will learn how identity management is used to control access to Azure resources. Azure encryption options and role-based management will also be covered as you prepare for exam 70-534.

- List Azure security features
- Describe the role identity management plays in securing resources
- Describe the OAuth protocol
- Describe the OpenID Connect protocol
- Describe the purpose of ADFS
- Plan an Azure ADFS deployment
- Configure Azure to allow Google identity authentication
- Describe Azure encryption options
- Enable Azure storage encryption
- Enable Azure database encryption
- Identify how roles are used with Azure management
- Assign built-in roles for Azure management
- Build and assign custom roles for Azure management
- Review Azure risk mitigation tactics
- View and configure policies in Azure Security Center
- Describe the purpose of ADFS and configure Azure roles

Architecting Microsoft Azure Solutions: Plan Azure SQL-Compliant Database Usage

This course covers SQL-compliant Azure solutions. You will learn how to plan and deploy an Azure SQL Database deployment for high availability. This course helps to prepare for the 70-535: Architecting Microsoft Azure Solutions exam.

- Recognize Azure SQL, MySQL and PostGRE database options
- Design a SQL Server implementation that meets business needs
- Use the portal to deploy an Azure SQL Database
- Use PowerShell to deploy an Azure SQL Database
- Use the CLI to deploy an Azure SQL Database
- Use on-premises SQL Server Management Studio to connect to Azure SQL
- Use SQL Server Management Studio on-premises to connect to Azure SQL Database
- Change Azure SQL Database geo-replication settings in the portal
- Describe how to migrate on-premises cold data to the cloud
- Configure Azure SQL Stretch Database
- Choose the appropriate backup and restore options for Azure SQL Database
- Perform an Azure SQL Database export using the portal
- Perform a restore of Azure SQL Database information

Architecting Microsoft Azure Solutions: Planning Azure NoSQL Deployments

In this course, you will discover NoSQL-compliant Azure solutions and learn how to plan and deploy NoSQL Azure solutions.

- List Azure NoSQL offerings
- Plan the best combination of Azure storage and caching options to meet business needs
- Define when Cosmos DB is best suited for use
- Define when Azure Table Storage is best suited for use
- Configure and use Azure Table Storage
- Explain when MongoDB should be used
- Configure and use MongoDB
- Recognize the benefits of indexing content for searching in Azure
- Configure and use Azure Search
- Enable Azure Search scaling options
- Configure Azure SQL indexing for Azure Search
- Define when Azure Time Series Insights should be used

Architecting Microsoft Azure Solutions: Data Services Design

In this course, you will explore big data processing resulting in meaningful insights, as well as services such as Azure Data Lake and Azure Data Catalog.

- Explain how meaningful insights can be gained from data analysis
 - Describe when the Azure Data Catalog should be used to analyze data
 - Use the portal to create an Azure Data Catalog
 - Use the portal to make data assets known to the Azure Data Catalog
 - Access registered asset data through the Azure Data Catalog
 - Describe when the Azure Data Factory should be used to analyze data
 - Use the portal to create an Azure Data Factory
 - Expose Azure blob data as an Azure Data Factory dataset
 - Use the portal to enable an Azure Data Factory pipeline
 - Describe when the Azure SQL Data Warehouse should be used
 - Use the portal to create an Azure SQL Data Warehouse
 - List the benefits of using Azure Data Lake Analytics
 - List the benefits of using Azure HDInsight
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Architecting Microsoft Azure Solutions: Automation with PowerShell, Chef and Puppet

In this course, you will explore various methods for automating the configuration management of new and existing Azure VMs.

- List various methods by which Azure administration tasks can be automated
- Explain how PowerShell DSC can be used to manage consistent configurations
- Create an Azure automation account and add a DSC configuration
- Determine which Azure automation solution best meets business needs
- Explain how Chef can be used to manage consistent configurations
- Explain how Puppet can be used to manage consistent configurations

Architecting Microsoft Azure Solutions: Implement Azure Automation

In this course, you will discover how to implement centralized VM management using Chef and Puppet, and learn how to work with Azure Batch.

- Deploy a hosted Chef server and configure a Chef management station
- Manually create a Chef Cookbook
- Upload a Cookbook from a management station to a Chef server
- Add the Chef VM extension to an Azure VM
- Apply a Chef Cookbook to a managed Chef VM
- Deploy a cloud-based Puppet Master server
- Add the Puppet VM extension to an Azure VM
- Apply a runlist to a Puppet agent
- Explain how Azure batch is used to schedule jobs
- Create an Azure Batch account using the portal
- Use the portal to create a job task
- Create an Azure Batch account using the CLI
- Use the CLI to create a batch pool

Architecting Microsoft Azure Solutions: Template and Runbook Automation

In this course, you will discover how to facilitate resource deployment through ARM templates and how to automate Azure tasks using runbooks.

- Describe how ARM template syntax is structured
- Browse for ARM templates and deploy them in the portal
- Use PowerShell to deploy resources using an ARM template
- Use the CLI to deploy resources using an ARM template
- Explain how runbooks can provide Azure automation
- Use the portal to add a Runbook Gallery runbook
- Use the portal to configure a Runbook Gallery runbook

Architecting Microsoft Azure Solutions: Web Application Design

In this course, you will explore web application design and configurations that improve performance and increase the app's resiliency to failure.

- Recognize the components that can be used to support an Azure web application
- Recognize how developers can create and consume custom web application code through Web APIs
- Design an Azure web application that performs well and is resilient to failure
- Describe how scalability and network isolation play a role with ASE
- Use the portal to deploy an Azure web application
- Use Visual Studio to deploy an Azure web application
- Create a PHP web application hosted on Azure
- Recognize the benefit of global caching through CDNs
- Recall the benefits of using containers to host applications

Architecting Microsoft Azure: Web Apps Design

In this course, you will learn how to deploy and manage Azure App and Mobile services. You will also use scheduled WebJobs to perform background maintenance tasks as you prepare for exam 70-534.

- Describe how Azure supports web applications
- List Azure web application configuration settings
- Identify settings contained within app service plans
- Deploy an Azure web app
- Explain the purpose of the Kudu Interface
- Use the Kudu Interface to change a web page
- Describe how Web API is used in Azure
- Explain the purpose of a background WebJob
- Configure a WebJob triggered by a schedule
- Describe how web app deployment slots are used
- Describe Azure mobile service offerings
- Use the Azure portal to create a mobile app backend
- Use Visual Studio to deploy a simple Node.js mobile app to Azure
- Describe how offline sync gets integrated with a mobile app
- Use Azure AD to control access to a mobile app
- Describe push notification to mobile app users and groups
- Deploy an Azure web and mobile app

Architecting Microsoft Azure Solutions: Monitoring Resources

In this course, you will explore various monitoring solutions for Azure resources, such as web apps and virtual machines.

- Define the relevance of monitoring in Azure
- View Azure resource activity logs
- Enable VM metric alerts in Azure
- Use the portal to configure activity log alerts in Azure
- Enable Azure Log Analytics
- Use the portal to monitor VM metrics in Azure
- Use the portal to enable application insights in Azure
- View Azure Advisor recommendations
- Configure IP flow and packet captures for Azure VMs
- View Azure service availability by region

Architecting Microsoft Azure: Monitoring and Disaster Recovery

This course focuses on planning for business disruptions using features such as load balancing and Hyper-V Replica. You will also implement Azure monitoring to track service performance and availability as you prepare for exam 70-534.

- Describe the importance of Azure resource continuous monitoring
- Enable monitoring for an Azure VM
- Enable monitoring for an Azure Web App
- Describe the monitoring features of Azure Application Insights
- Identify third-party tools used for Azure monitoring
- Recall the features of the Azure Load Balancer
- Recall the features of Azure Traffic Manager
- Configure load balancing for a web application
- Identify when the Application Gateway should be used
- Plan for business disruptions related to Azure
- Explain how Hyper-V Replica plays a role in disaster recovery
- Review the features of Azure Site Recovery
- Configure the Azure Load Balancer and explain DR options

Architecting Microsoft Azure: Compute-Intensive Applications

In this course, you will explore methods of configuring long-running and compute-intensive applications. You will also learn about integrating Azure services such as Azure AD and IoT Hub as you prepare for exam 70-534.

- Describe how high-performance computing expedites working with large data sets
- Define how Azure Batch runs large-scale applications
- Configure Azure Batch
- Explain how Azure Scheduler schedules jobs in the cloud
- Schedule a job using Azure Scheduler
- Explain how Active Directory can be used for identity management in Azure
- Link on-premises Active Directory with Azure
- Describe the purpose of Azure IoT Hub
- Explain how media streaming is configured using Azure Media Services
- Deliver content using Azure Media Services
- Describe how Azure Search is used
- Create and query an Azure search index
- Describe the purpose of Azure Machine Learning
- Configure Azure Machine Learning
- Schedule a job, and enable media services and Azure Search

Architecting Microsoft Azure: Messaging and Hybrid Applications

In this course, you will learn how application messaging components work together using services such as Storage Queue and Service Bus. Joining devices to Azure AD will also be covered as you prepare for exam 70-534.

- Specify how application components can communicate with each other using messaging
- Describe how Azure Service Bus is used by applications
- Configure an Azure topic and subscription
- Describe the purpose of the Azure Event Hub
- Write a simple application that sends messages to Azure Event Hub
- Identify how storage queues allow component communication
- Use the Azure portal to create a queue
- Write a simple application that uses Azure Service Bus
- List connectivity options related to hybrid applications
- List the reasons Service Bus Relay should be used
- Recognize the benefits of joining devices to a domain
- Join a Windows 10 station to Azure Active Directory
- Describe app components messaging concepts

Architecting Microsoft Azure Solutions: Application Design and Messaging

In this course, you will explore Azure PaaS offerings that facilitate application and workflow development, as well as Azure Function and Logic apps.

- Identify IT workload requirements between on-premises and the cloud
- Recognize how Azure Function apps can be used for code modularity in the cloud
- Use the portal to create an Azure Function triggered by an HTTP request
- Describe how Azure Service Fabric allows developers to focus on the app and not the supporting infrastructure
- Recognize how Logic apps are used to implement workflows

Architecting Microsoft Azure Solutions: Planning Artificial Intelligence Services

In this course, you will discover when to use AI services, such as Machine Learning, Cognitive Services and IoT Hub.

- Recognize how Azure Cognitive Services provides text analysis and translation, as well as facial recognition
- List how Azure Machine Learning is used by modern algorithms
- Recall how users can interact with apps that use the Azure Bot Service
- Use the portal to create and explore an Azure Machine Learning workspace
- Use the portal to import an Azure Machine Learning dataset
- Use the portal to create a simple Azure Machine Learning experiment
- Recognize when IoT Hub should be used
- List the benefits of using Azure Media Services to deliver multimedia content

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